



Energy and Climate Change Action Plan

Community Engagement Workshop 2

Climate Change Vulnerabilities and Adapting to Climate Change Impacts

March 1, 2022

7:00 PM

Tell us about who you are. Take the participation poll:

<https://www.menti.com/v1qgiuv99f>

-or-

<https://www.menti.com> and enter code 2470 2270

Workshop Goals

- Climate change vulnerabilities and adaptation overview
- Learn about regional and local climate adaptation
- Gather feedback on climate adaptation priorities and concerns

Provide Feedback: <https://www.surveymonkey.com/r/J25VMDD>

ECCAP updates & materials: <https://www.alexandriava.gov/energy/energy-and-climate-change-action-plan>



Reminders



Please rename yourself to include your First and Last name.



Please remember to mute yourself during the presentations or when not speaking during breakout sessions.



We encourage you to keep your video on while participating in the workshop!



Remember to be respectful and allow for productive discussion during the community engagement event. Please allow space for everyone to share their thoughts and ideas.



Please use the Zoom Chat box to ask questions, share ideas, or offer to support fellow attendees.



Change your Name

How to Change your Name in Zoom

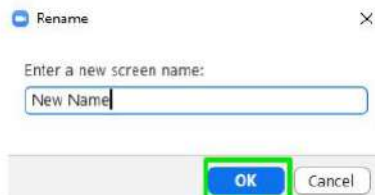
1.) To change your name after entering a Zoom meeting, click on the **"Participants"** button at the top of the Zoom window.



2.) Next, hover your mouse over your name in the "Participants" list on the right side of the Zoom window. Click on **"Rename"**.



3.) Enter the name you'd like to appear in the Zoom meeting and click on **"OK"**.

A screenshot of the Zoom 'Rename' dialog box. The title bar says 'Rename'. Below the title bar, there is a text input field labeled 'Enter a new screen name:' with the text 'New Name' entered. At the bottom of the dialog, there are two buttons: 'OK' and 'Cancel'. The 'OK' button is highlighted with a green rectangular box.

Mute and Unmute



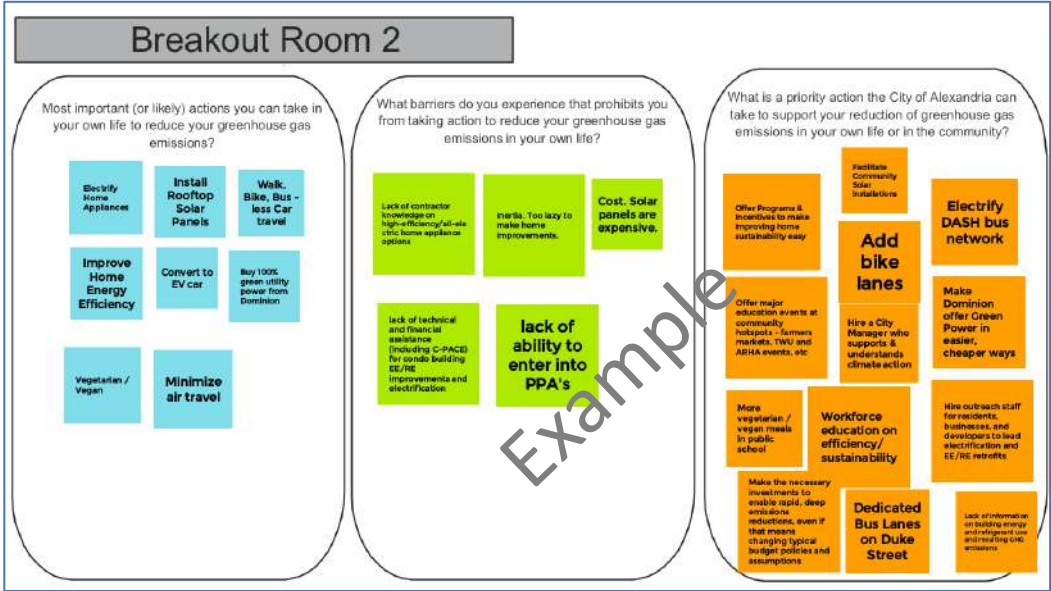
Tools We'll Be Using

Share up to 5 words or phrases describing what local community climate action means to you here in Alexandria?



Mentimeter

Mentimeter



Jamboard "whiteboard"



Agenda

- Welcome, Overview, Logistics
- Opening Remarks – Marian Pegram (Co-Chair Alexandria ECCTF)
- Keynote – Dr. Reid Sherman (ICF/US National Climate Assessment)
- Presentations – Nora Jackson (NVRC) & Dr. Dan Medina (Flood Action Alexandria)
- Polling Questions
- Breakout Sessions
- Report out from Breakout Sessions
- Closing Remarks



Workshop Introduction

Community Engagement Workshop Emcee

Mary Harris

Co-Chair, Alexandria Energy and Climate Change Task Force

Opening Remarks

Marian Pegram

Co-Chair, Alexandria Energy and Climate Change Task Force



Keynote

Dr. Reid Sherman

ICF/US National
Climate Assessment

Dr. Reid Sherman is a climate adaptation consultant with the global consulting firm ICF. He works with federal agencies on strategies for researching and assessing climate adaptation as well as providing climate information to support decision-making. He has worked on climate in the federal government for 8 years, including contributing to the 4th National Climate Assessment, published in 2018, and the 5th, currently in progress.



The Climate Adaptation Landscape

Reid Sherman

The New York Times

***Climate Change Is Harming the Planet
Faster Than We Can Adapt, U.N.
Warns***

Countries aren't doing nearly enough to protect against the disasters to come as the planet keeps heating up, a major new scientific report concludes.

What is adaptation?



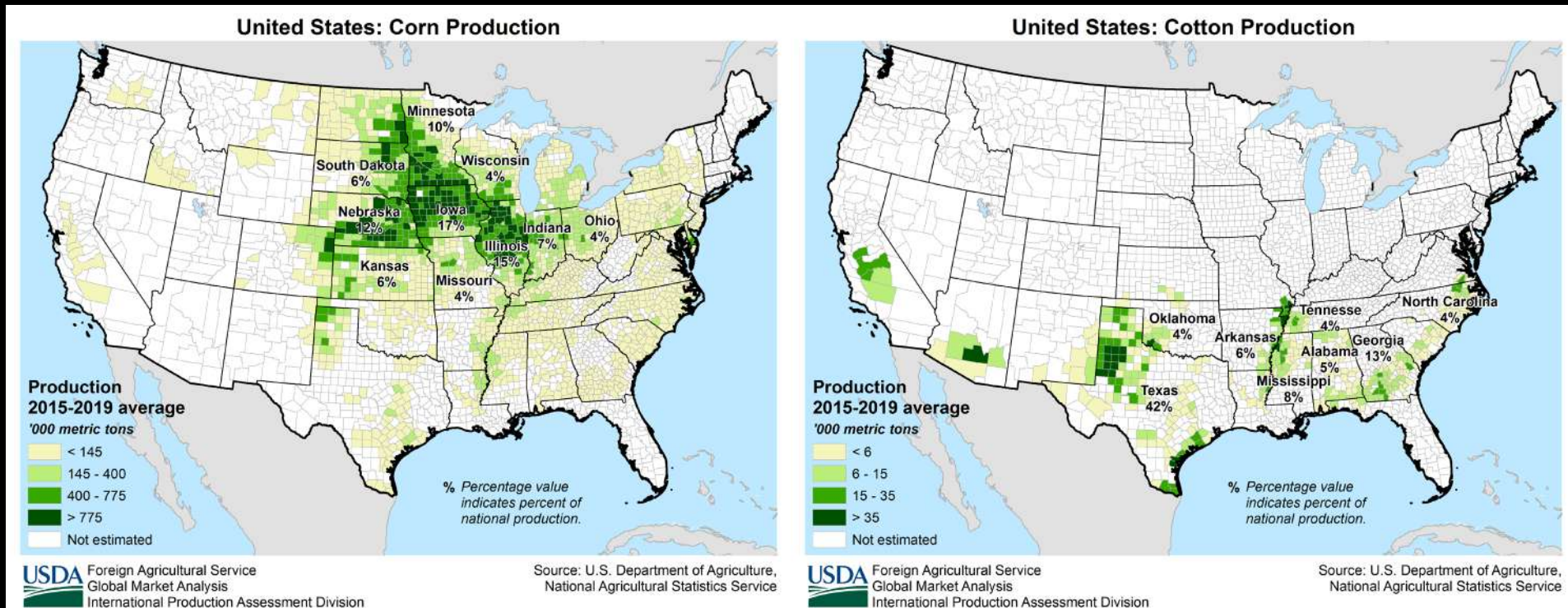
Collective action is necessary



Adapting to the
climate and
geography is
nothing new



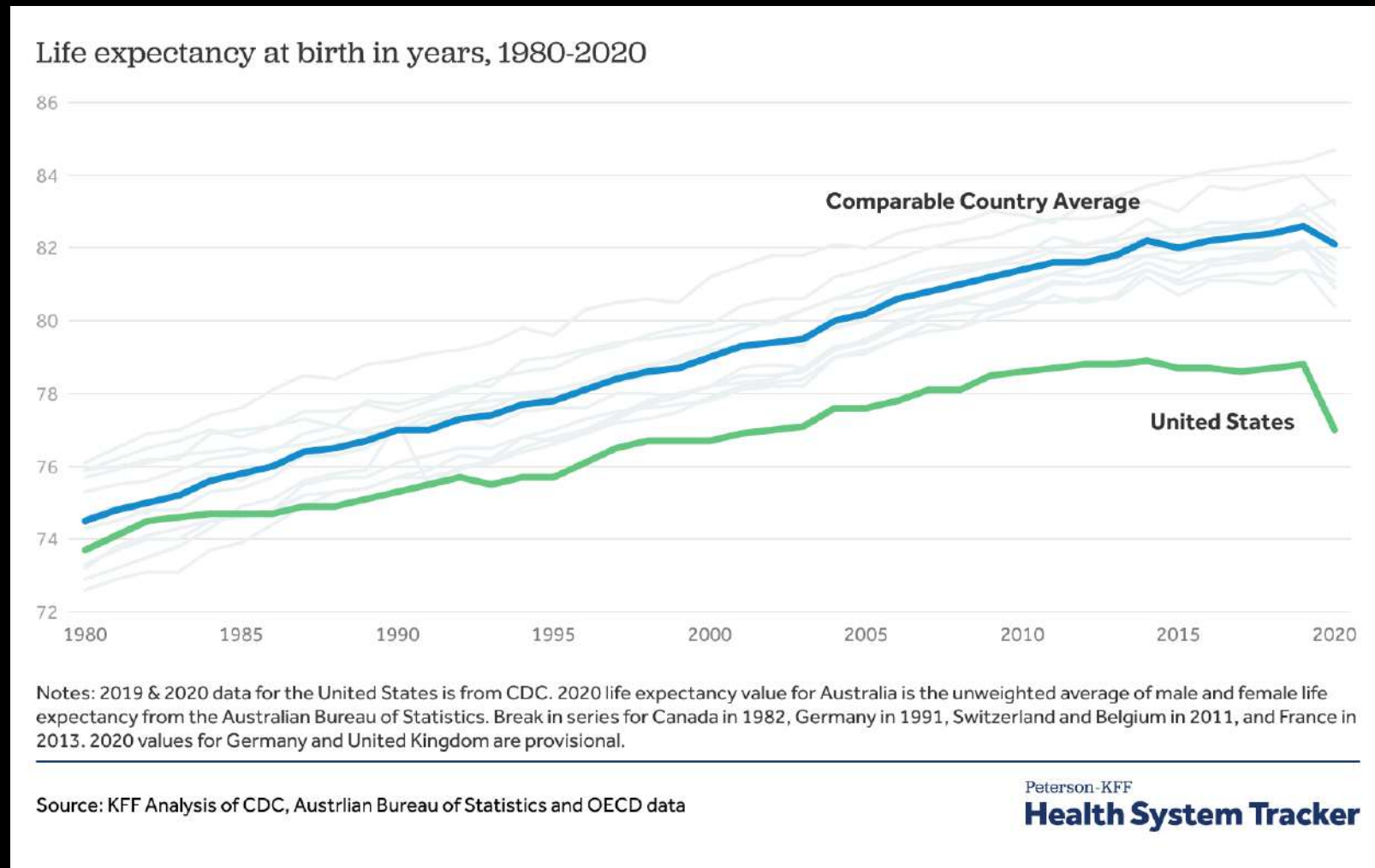
Individual actions depend on and collectively influence larger systems



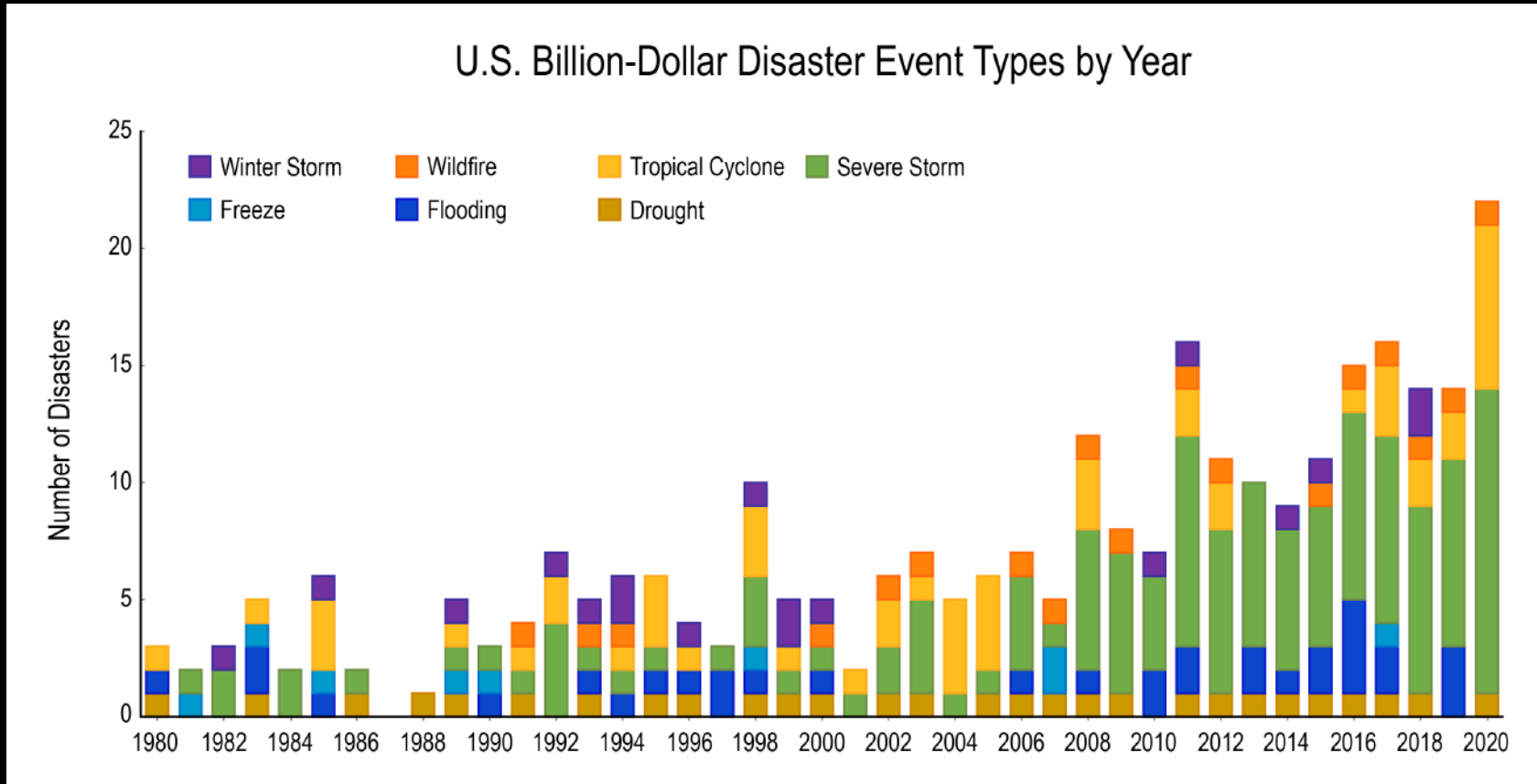
It's preferable not to adapt the hard way



We could do better even with a stable climate



Climate change is increasing the challenge








Things built
now will exist
in a changed
climate



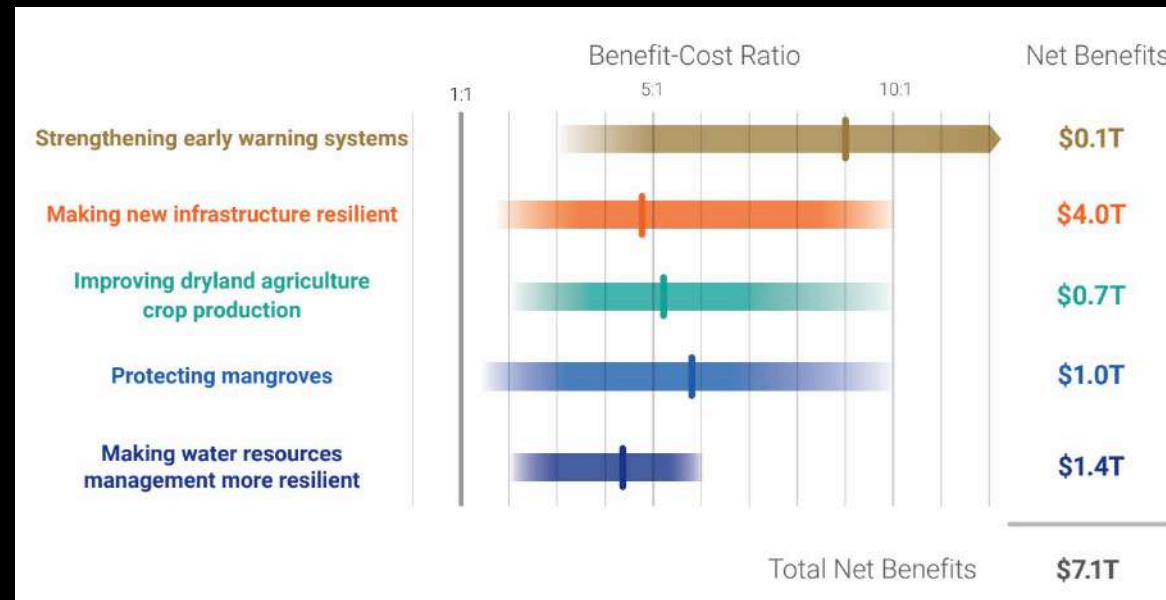
Adaptation
occurs at all
geographic
scales



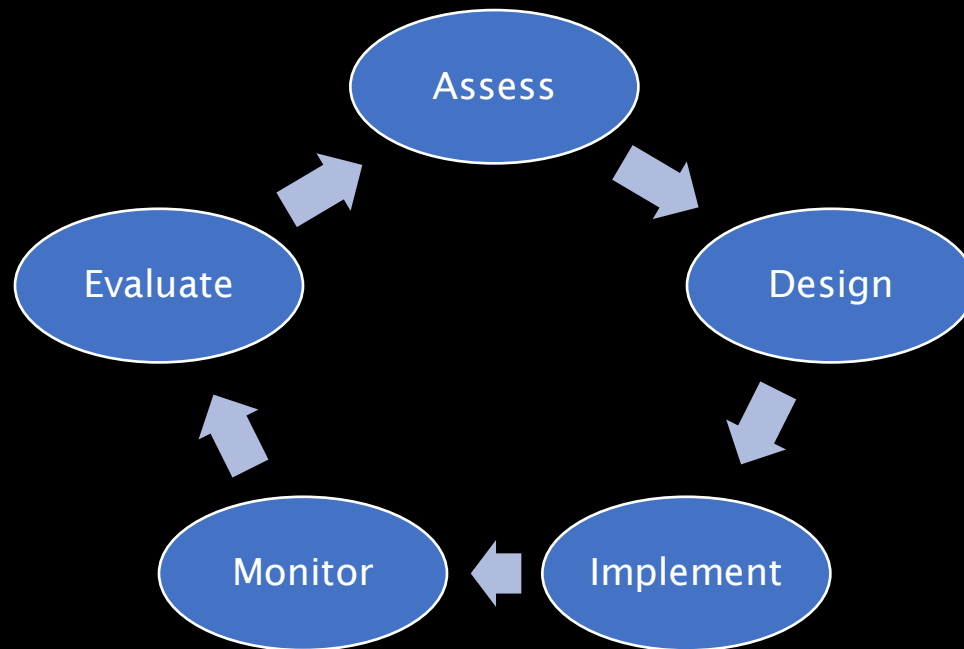
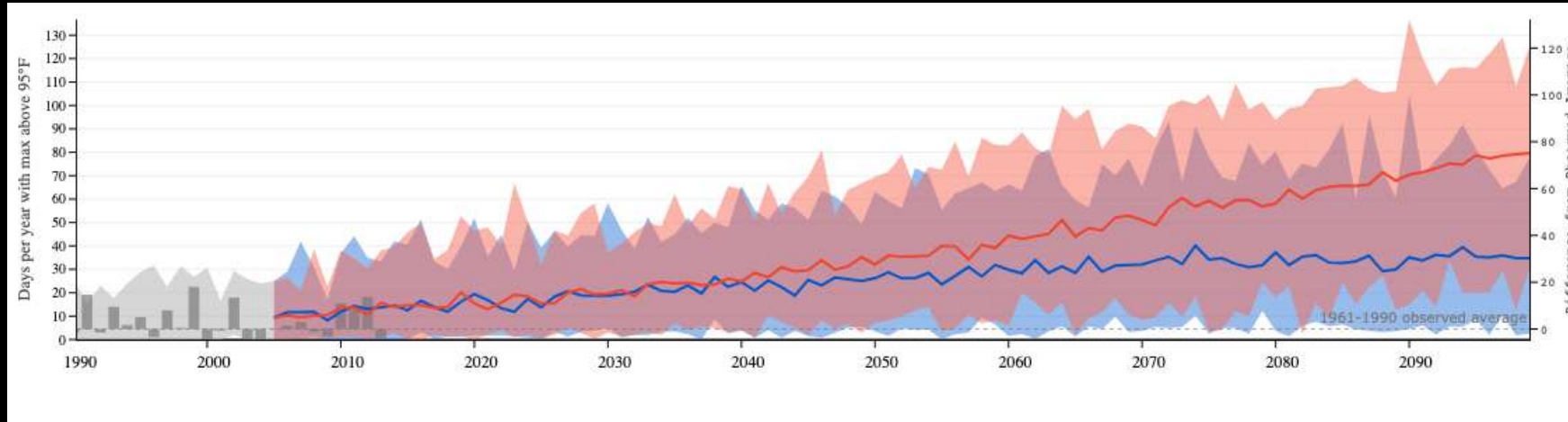
Adaptation is a worthwhile investment

National Institute of BUILDING SCIENCES™		ADOPT CODE	ABOVE CODE	BUILDING RETROFIT	LIFELINE RETROFIT	FEDERAL GRANTS
Overall Benefit-Cost Ratio		11:1	4:1	4:1	4:1	6:1
Cost (\$ billion)		\$1/year	\$4/year	\$520	\$0.6	\$27
Benefit (\$ billion)		\$13/year	\$16/year	\$2200	\$2.5	\$160
 Riverine Flood		6:1	5:1	6:1	8:1	7:1
 Hurricane Surge		not applicable	7:1	not applicable	not applicable	not applicable
 Wind		10:1	5:1	6:1	7:1	5:1
 Earthquake		12:1	4:1	13:1	3:1	3:1
 Wildland-Urban Interface Fire		not applicable	4:1	2:1	not applicable	3:1

Copyright © 2019 The National Institute of Building Sciences



How much adaptation is required?



Attention and action is accelerating

The Washington Post

Capital Weather Gang

White House launches climate initiatives to arm communities against floods, extreme weather

FEMA is seeking public input on revising federal flood standards, which have not been meaningfully changed in 45 years

The New York Times

Infrastructure Bill Makes First Major U.S. Investment in Climate Resilience

The measure includes \$47 billion to help communities prepare for the new age of extreme fires, floods, storms and droughts that scientists say are worsened by human-caused climate change.

Photo credits

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Raccoon © Triker-Sticks, [CC BY-NC-ND 2.0](#)

Aqueduct © Gordon, [CC BY-NC-ND 2.0](#)

House left after hurricane © Joselyne Augustino/FEMA

Windmill © Teake Zuidema

Storm surge barrier © World66, [CC BY-SA 2.0](#)

San Francisco earthquake © US Geological Survey

Old Town Alexandria © Ken Lund/Flickr, [CC BY-SA 2.0](#)

Houston flooding © Jill Carlson, [CC BY 2.0](#)

Wildfire © U.S. Forest Service

Tidal flooding © wikimedia user B137, [CC BY-SA 2.0](#)

Chart on Billion Dollar Disasters: U.S. Global Change Research Program

Chart on Benefit-Cost Ratio: Global Commission on Adaptation

Presentation

Nora Jackson

Northern Virginia
Regional Commission
(NVRC)

Nora Jackson joined the Northern Virginia Regional Commission in August 2021 after working in land and watershed management for the last several years. A native of Virginia with a background in environmental science and policy, her passion for the outdoors kept her working in the Chesapeake Bay Watershed and ultimately led to her current position as a Resiliency Planner for the Commission. In this new role, she is working to strengthen the communities of Northern Virginia by coordinating resilience planning at the regional level as we all face increasing challenges from the impacts of climate change.





Adapting to the effects of Climate Change Through Regional Resilience

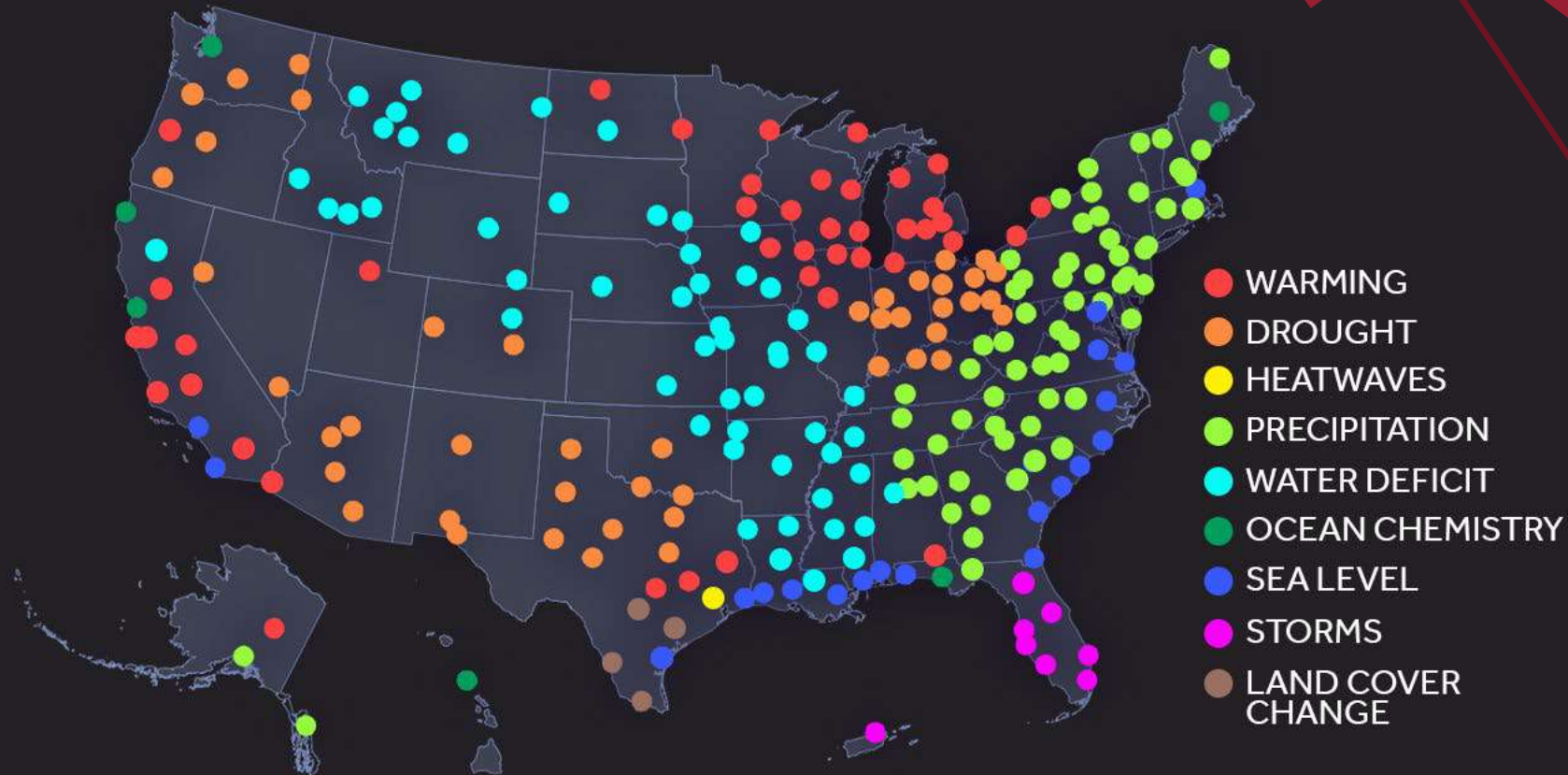
Nora Jackson, Resiliency Planner
Northern Virginia Regional Commission



novaregion.org / [@novaregion](https://www.instagram.com/novaregion)



UNITED STATES TOP CLIMATE HAZARDS IN 2050



Produced: 2/20/2019. Source: Mora et al. 2018. Projected hazards under RCP 8.5. Climate Central removed sea level & ocean impacts at locations with fewer than 0.1% structures exposed to annual flooding in 2050 under RCP 8.5, using 95th percentile sea level projections from Kopp et al. 2017.

Agenda



Definitions

What is happening and why?

What is the region doing?



Definitions

Climate Change- long-term changes in the average weather of a region

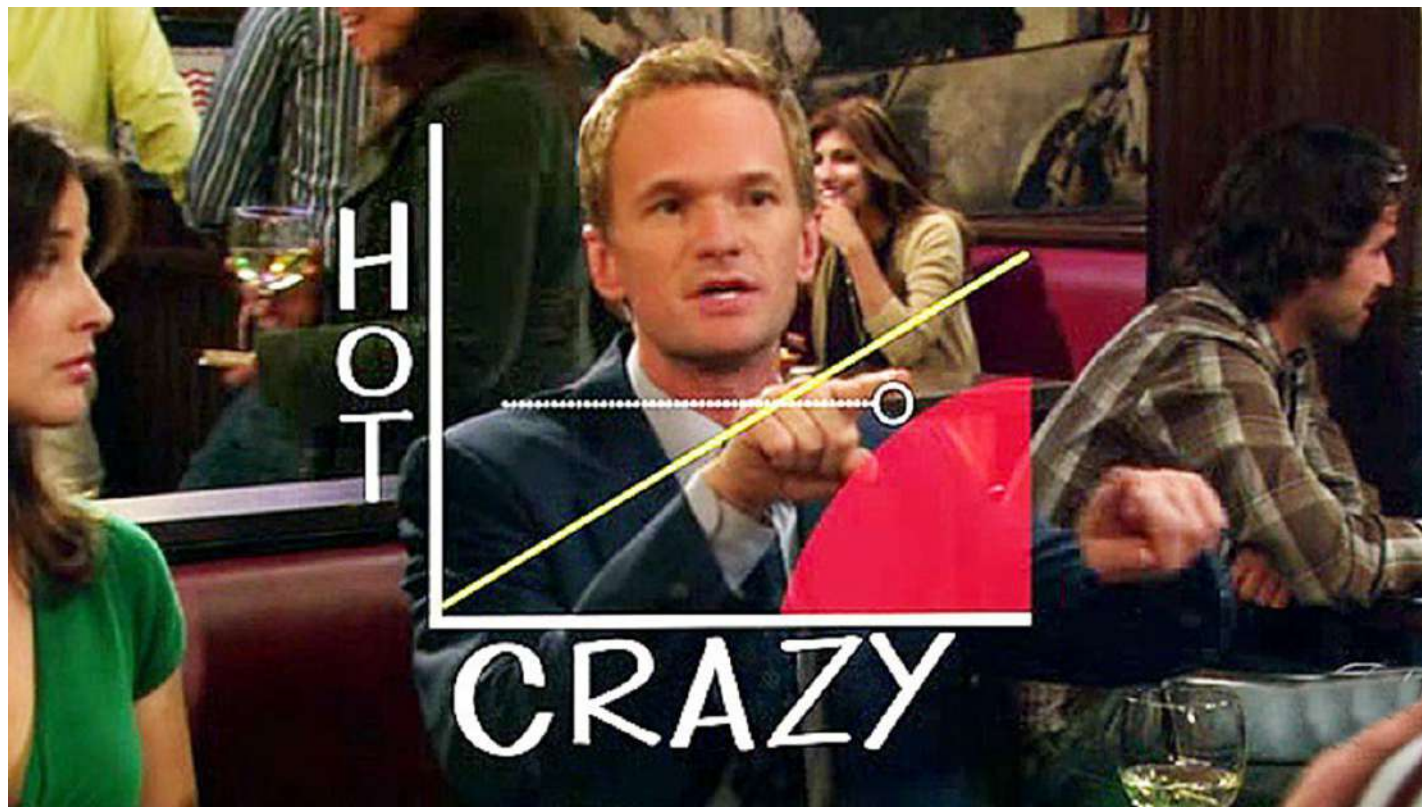
Weather- short term atmospheric conditions

Resiliency - the ability to adapt and thrive despite changing conditions

Flooding – an instance where water pools somewhere it's not supposed to be

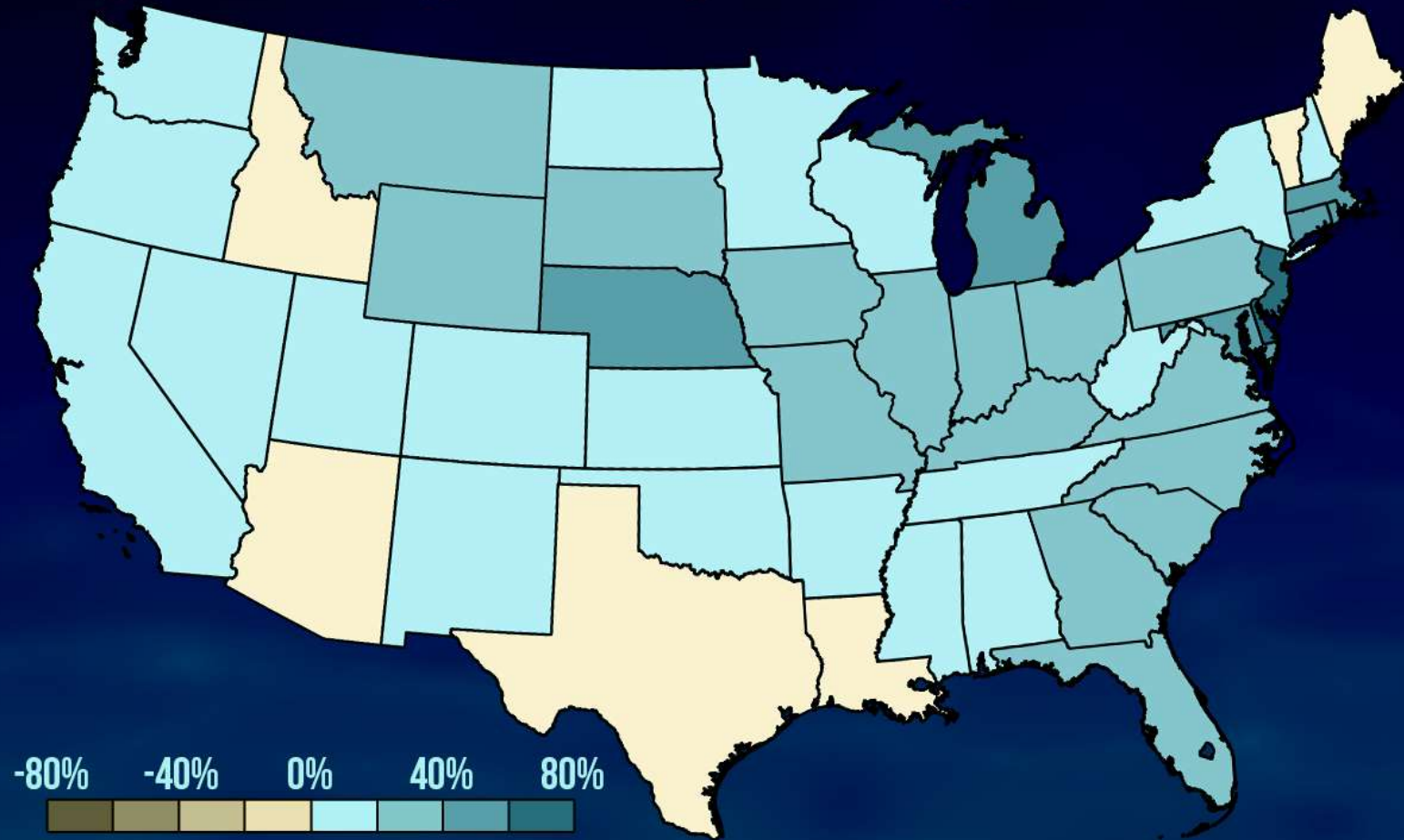
Hazard Mitigation- reducing the risk of property and people damage

Why so "extreme"? More variation, more intense



MORE INLAND FLOODING

Projected change in heavy runoff by 2050



Index based on runoff volume exceeding 95th percentile of a 1990-2010 baseline
Source: Climate Central States at Risk report

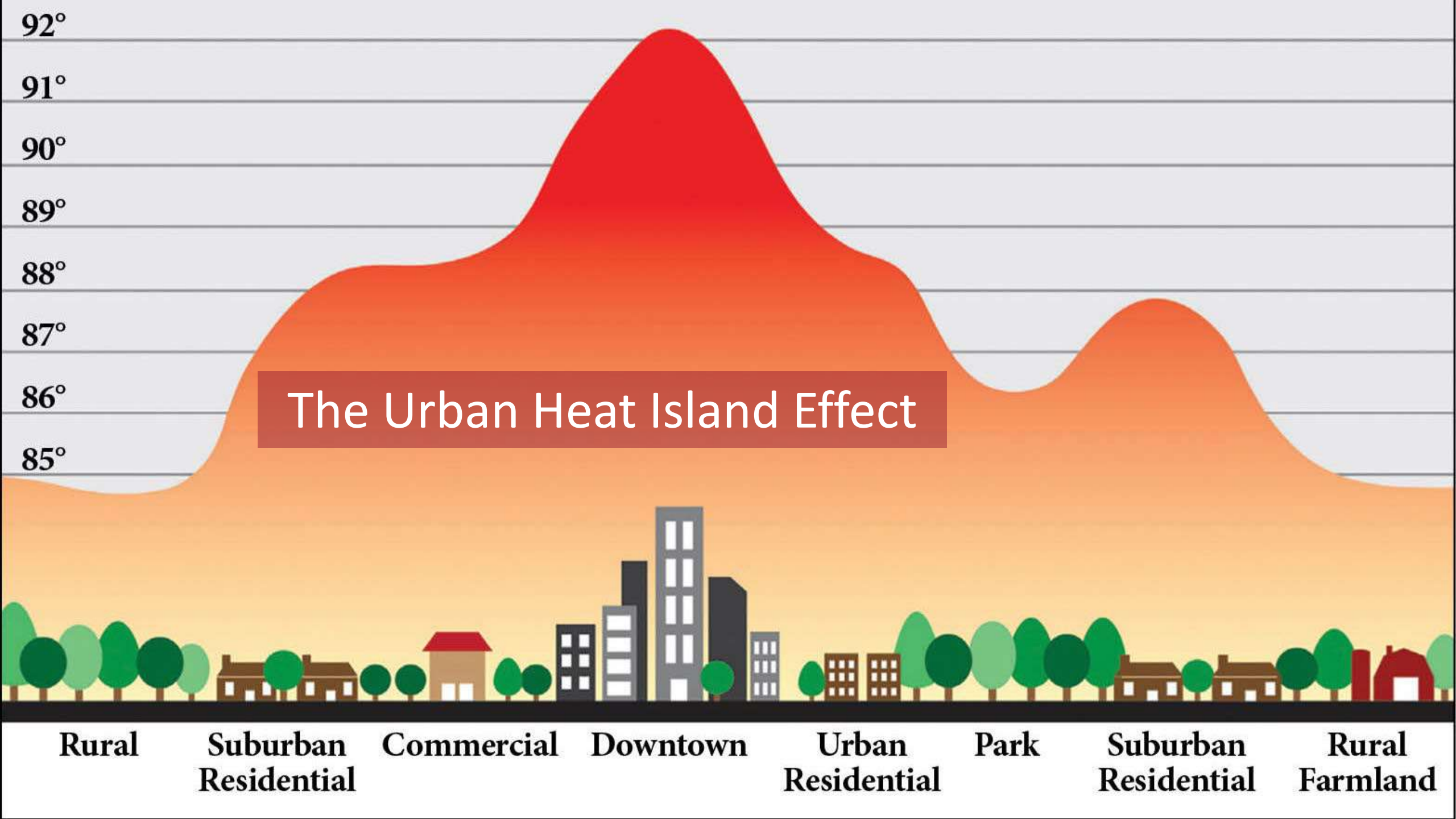
The sky is falling...

Bomb cyclones

Microbursts

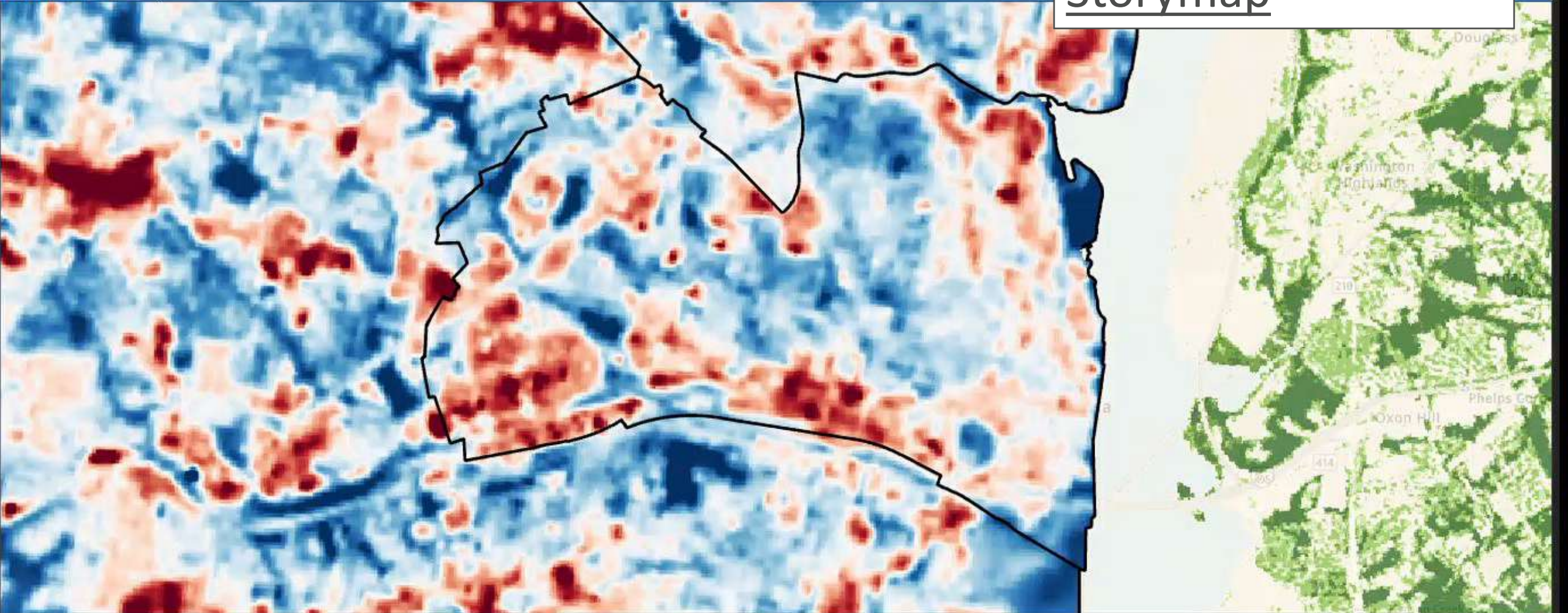
Rain bombs



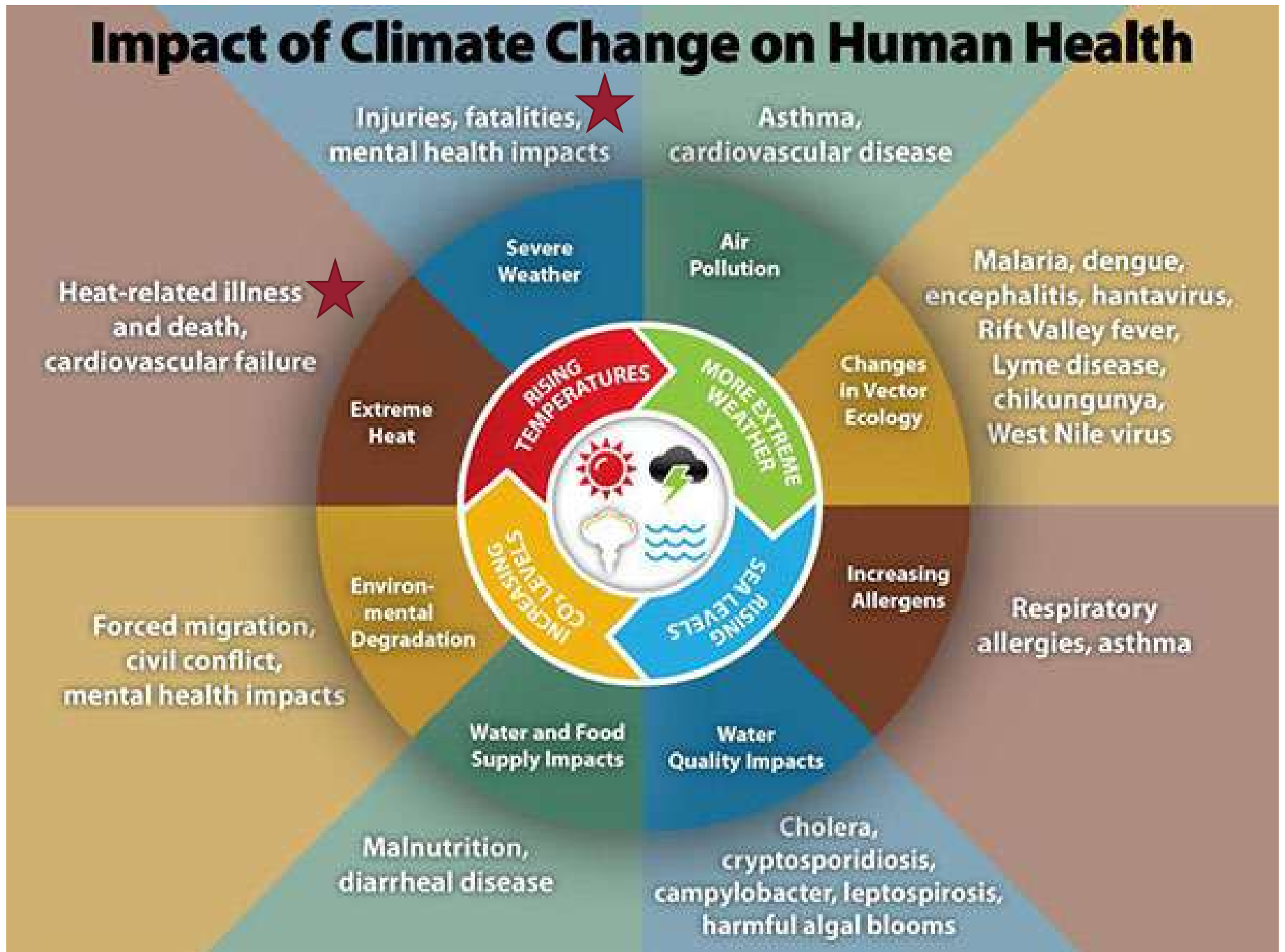




Heat Islands in Northern Virginia: Storymap



Impact of Climate Change on Human Health



Why do we care?

Agenda



Definitions

What is happening and why?

What is the region doing?

Federal, State and Local Programs

- HMP- Hazard Mitigation Plan
- FEMA- Federal Emergency Management Agency
- VDEM- Virginia Department of Emergency Management
- NFIP — National Flood Insurance Program
- VACRMP- Virginia Coastal Resilience Master Plan
- Resilient Fairfax — Climate Projections Report

Most severe:

Extreme heat, heavy precipitation and inland flooding



Just 1 inch of water
can cause **\$25,000**
of damage to
your home.

FEMA NATIONAL FLOOD INSURANCE PROGRAM

Hazard Mitigation Plan- Flooding



Increase capacities of stormwater systems.

Identify infrastructure that should be elevated or relocated to avoid future inundation.

Continue acquisition, elevation, and relocation projects for property owners.

“Flood-proof” mechanical systems and/or components of industrial and commercial structures.

Update flood hazard mapping



Hazard Mitigation Plan- Extreme Heat

Increase urban tree cover.

Install cool roofs to reduce negative health impacts from heat.

Implement urban designs that facilitate air movement and alleviate heat.

Increase standards for insulation of buildings and homes.

Increase preparedness education about heat-related health issues for healthcare providers and the public.



#BeatTheHeat

Stay in the shade or indoors during extreme heat!

A graphic illustration of a man in a blue shirt and dark pants, looking distressed with sweat drops on his face. To his right is a large yellow sun icon. The text "#BeatTheHeat" is written in blue, and "Stay in the shade or indoors during extreme heat!" is written in bold blue text at the bottom.



Flash Flood Warning and Alerts

Regional Rain Gauge Network

Community Flood Preparedness Fund



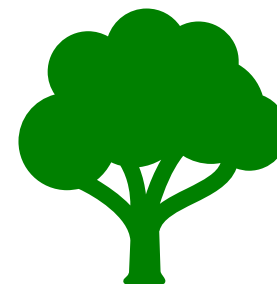
Shifting to “smart” planning



What contributes to heat and runoff?



What cools the air and helps absorb water?





What should I take away from this?

We are unique, the issues we face are not.

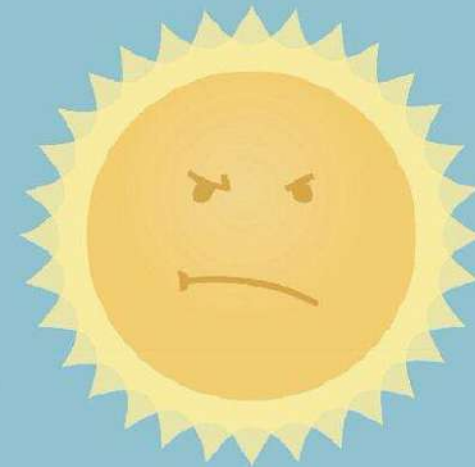
We may not have the answer, but we are getting less wrong

Warmer=Weirder

But he
doesn't
have to be...



He's a killer.





Thank you!

njackson@novaregion.org



novaregion.org / [@novaregion](https://www.instagram.com/novaregion)



Presentation

Dr. Dan Medina

Flood Action
Alexandria
City of Alexandria

Daniel Medina, PhD, PE is the Stormwater Program Manager for the City of Alexandria, Virginia. He has 30 years of experience in water resource planning and climate resilience. He obtained his Civil Engineering degree from Universidad de los Andes, Bogotá, Colombia and obtained a PhD from Cornell University. He has led projects in North America, Latin America, and the Caribbean. He was invited to testify before the U.S. Senate Environment & Public Works Committee on the effects of uncontrolled highway runoff on receiving waters. He is a consultant for the World Bank and the Inter-American Development Bank.





A Holistic Approach to Flood Mitigation

Daniel Medina, PhD, PE
Stormwater Program Manager

FLOODACTION

ALEXANDRIA

Energy and Climate Change Action Plan, Workshop #2

March 1, 2022



Outline

- What's an ultra urban environment?
- Causes of flooding
- Alexandria's holistic approach

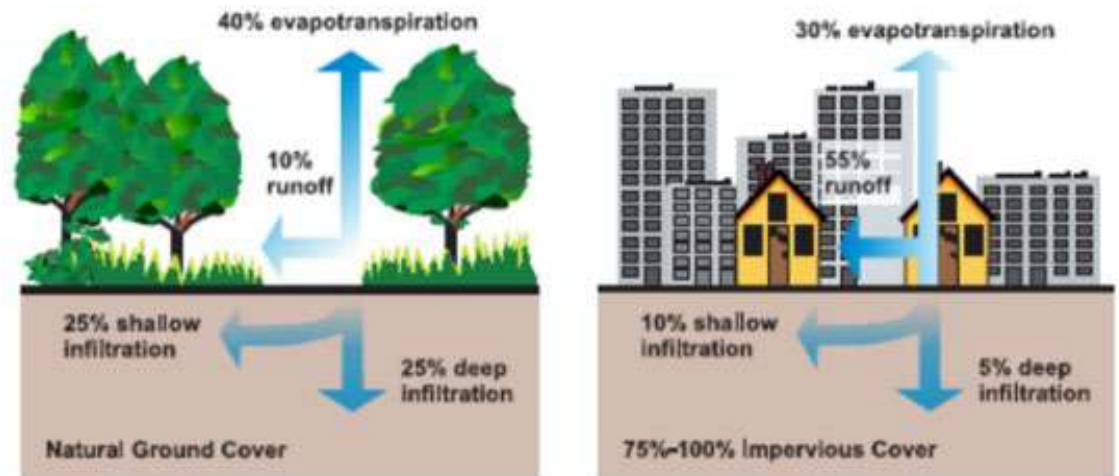
What's an ultra urban environment?

- Urban areas more than 85% impervious:
 - Rooftops
 - Roads and streets
 - Parking lots
 - Compacted soils
- Areas where streams have been piped
- Areas with combined sewers



Causes of Flooding

- Existing impervious areas
- Future imperviousness
 - New development
 - Re-development
- Inadequate drainage
- Encroachment in flow paths
- Soil compaction
- Lawns



Causes of Flooding

- High tides
- Sea level rise



Old Town Alexandria, 10/29/2021

Climate change is an amplifier



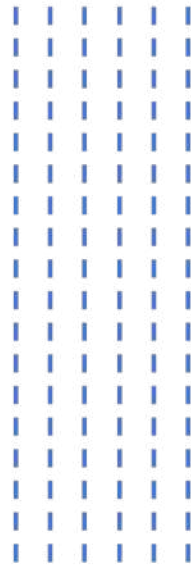
Warmer air holds more moisture



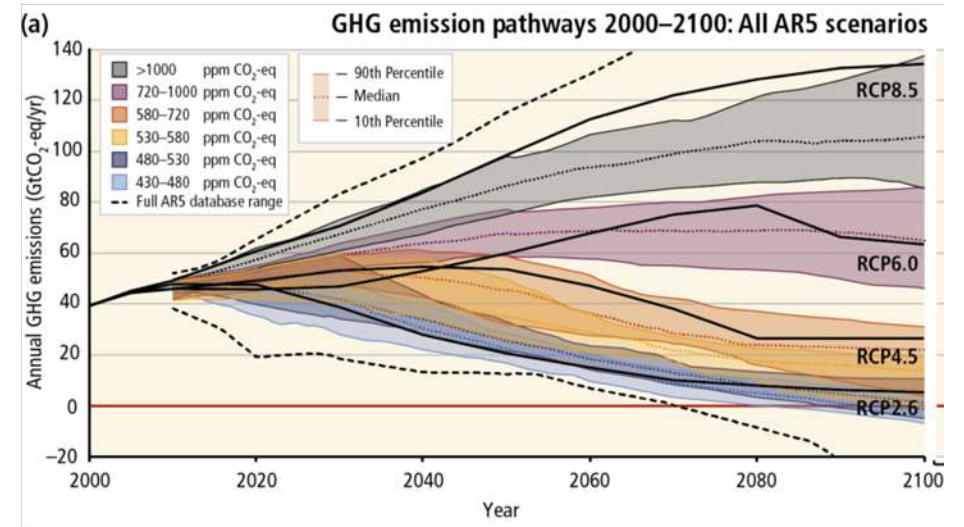
More solar heat causes greater evaporation



More moisture forms clouds



Heavier rainfall



More Frequent, Intense (“Heavy”) Rainfall Events

- **2018:** Virginia’s wettest year on record, 20”+ over normal
- **July 8, 2019:** Regional Flood
- **July 23, 2020:** Local Flash Flood
 - 60-80% of monthly avg in 30 minutes
- **Sept. 10, 2020:** Local Flash Flood
 - 2.5-4” with rates up to 3”/hr in 10 mins
 - Daily rainfall record at National Airport
- **August 21, 2021:** Very Local Flash Flood in single local watershed



Radar, September 10, 2020

Alexandria's holistic approach

- Large capacity projects
- Spot improvements
- Maintenance and Operation of the Stormwater and Sanitary Systems
- Stream and channel maintenance
- Community involvement (Alex311)
- Waterfront initiative
- Flood mitigation grant program
- Stormwater utility fee



Neighborhood Spot Improvements



A crew pours concrete to form the catch basins for the new, wider inlets on Hume Avenue.



Engineer Brian Rahal, of the Stormwater Management Division, monitors progress on larger inlet installation on Hume Avenue on Jan. 24, 2022

Alexandria's holistic approach

- Large capacity projects
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Operations & Maintenance

- ✓ Inspecting and cleaning storm lines every 3-5 yrs.
- ✓ Inspecting and clearing before storms
- ✓ Repairing stormwater infrastructure as needed
- ✓ Maintaining streams and channels
- ✓ Maintaining large infrastructure components, such as Hooffs Run Culvert
- ✓ Inspecting interior of sewers via CCTV
- ✓ Street sweeping & leaf removal
- ✓ Additional maintenance in response to service requests received via Alex311



Alexandria's holistic approach

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Alexandria's holistic approach

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Communications

FLOOD ACTION NEWSLETTER

Project updates, news and messages directly from senior leaders.

VIDEO STORYTELLING

Informative and educational video messaging from the staff.

SOCIAL MEDIA

Are you following T&ES?
Get an inside look at projects.



1,190 Posts 1,334 Followers 43 Following

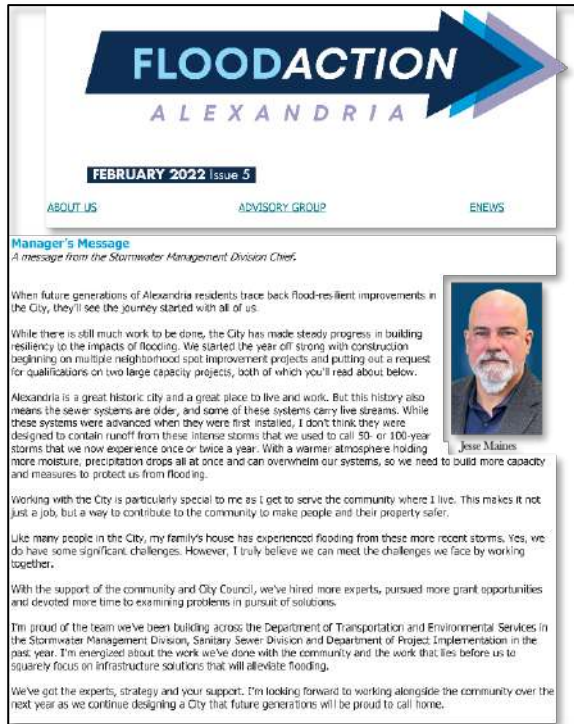
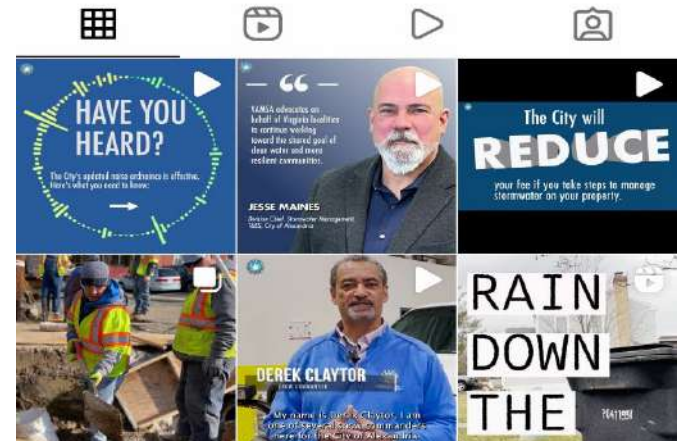
T&ES Alexandria, VA

The official account for the City of Alexandria VA Department of Transportation & Environmental Services.

alexandriava.gov/TES
301 King St, Rm 4100, Alexandria, Virginia

Followed by alexandriavpd, dashbus_ and 23 others

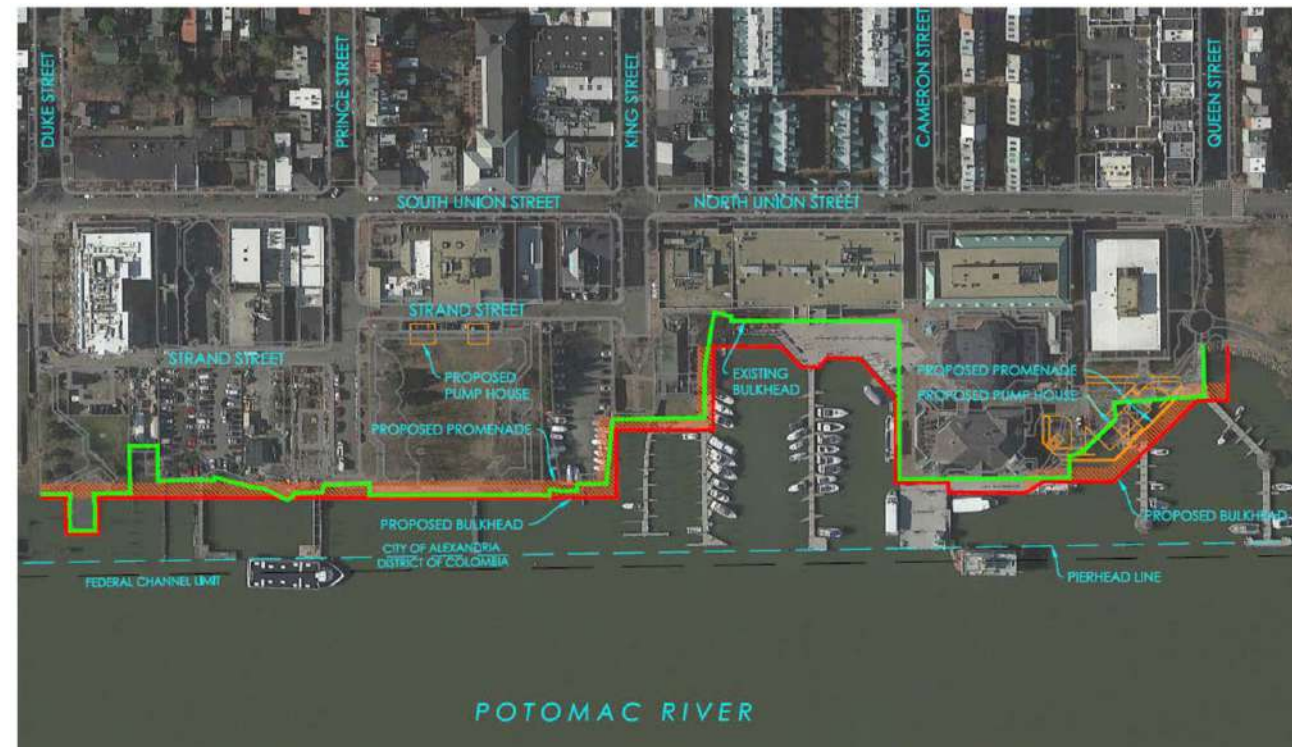
Following ▾ Message Email +



ART: FREEPIK

Alexandria's holistic approach

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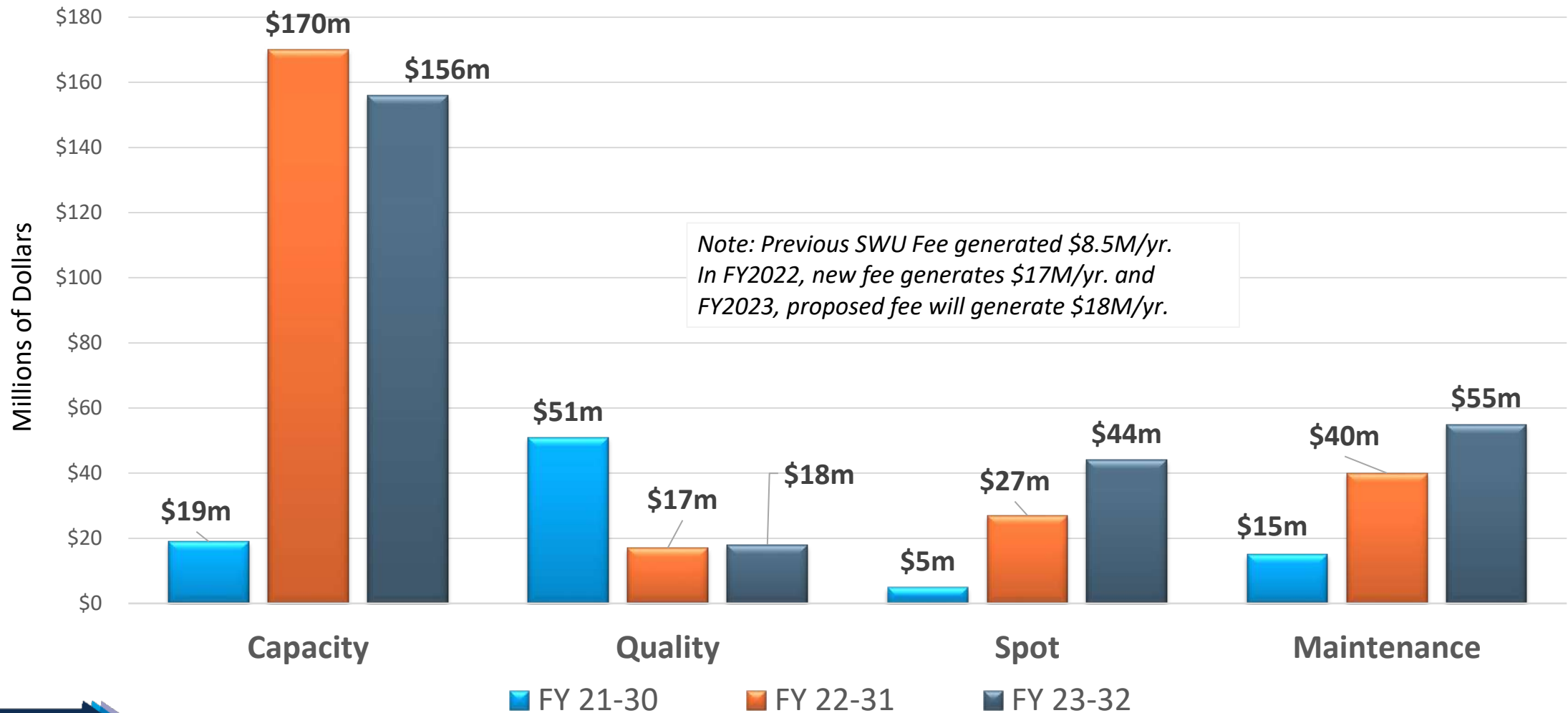


Alexandria's holistic approach

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Stormwater Management Funding Changes from FY22 – FY23 Proposed





The Flood Action Alexandria initiative is the comprehensive response to address flooding in all corners of the City. Here's a look at what our team does to mitigate flooding.

Thank you!



www.alexandriava.gov/FloodAction

daniel.medina@alexandriava.gov

Polling Questions:

? What climate vulnerabilities are you most concerned about affecting you and the Alexandria community?

? What is important to you for Alexandria to consider when prioritizing climate adaptation actions?

Tell us about who you are. Take the participation poll:

<https://www.menti.com/absduigrc>

-or-

<https://www.menti.com> and enter code 4975 9014



Breakout Room Sessions

 Approximately 20 minutes


 Each Breakout Room will have a Facilitator *(let City staff know if a Facilitator is not in your room)*

 Please remember to rename yourself to include your First and Last name.

 Please raise your hand when you wish to speak so the Facilitator knows to call on you.

 Please remember to mute yourself when not speaking.

 Remember to be respectful and allow for productive discussion with your fellow breakout session attendees. Please allow space for everyone to share their thoughts and ideas.

 Please use the Chat box to share additional ideas or support your fellow Breakout Room attendees.



Breakout Sessions

 Please use the Jamboard corresponding to your assigned Breakout Room number to post your ideas, thoughts, and perspectives for everyone to see:

<https://bit.ly/3K5Wn63>

? Question 1: What do you see as the City's role in supporting the community's adaptation to climate change impacts?

? Question 2: What existing ways do you see or experience the City supporting the community's adaptation to climate change impacts? How can these be improved or expanded?


? Question 3: What additional climate adaptation strategies are you most interested in seeing Alexandria implement? What strategies from other communities can Alexandria consider?



Report out on Breakout Room Sessions

 Approximately 1 min summary of your Breakout Room's discussion

 Share one or two of the most important ideas that came from your group's discussion.

 Please use the Chat box to share additional ideas or support your fellow Breakout Room attendees.



Stay Informed and Getting Involved

 Subscribe to the City of Alexandria's *Transportation and Environmental Services Environmental* eNews for Energy and Climate Change Action Plan updates – <https://member.everbridge.net/1332612387832027/login>

 City of Alexandria Social Media - <https://www.alexandriava.gov/SocialMedia>

 Learn about the City's Energy and Climate Change Action Plan & Energy and Climate Change Task Force - <https://www.alexandriava.gov/Energy>

 Learn about Eco-City Alexandria and the Environmental Action Plan 2040 - <https://www.alexandriava.gov/Eco-City>



Provide Community Engagement Workshop Feedback

 Please give us your feedback on tonight's Community Engagement Workshop:

<https://www.surveymonkey.com/r/J25VMDD>

